

be the same or different and respectively and independently represent an integer of 0-2,  $1 \leq m+n \leq 3$ , L and M may be the same or different and respectively and independently represent  $-\text{CH}_2\text{CH}_2-$ ,  $-\text{CH}(\text{CH}_3)\text{CH}_2-$ ,  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}_2\text{O}-$ ,  $-\text{OCH}_2-$ ,  $-\text{CF}_2\text{O}-$ ,  $-\text{OCF}_2-$ ,  $-\text{COO}-$ ,  $-\text{OCO}-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CF}=\text{CF}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{O}(\text{CH}_2)_3-$ ,  $-(\text{CH}_2)_3\text{O}-$ ,  $-(\text{CH}_2)_4-$  or a single bond, rings A and B when present may be the same or different and respectively and independently represent a trans-1,4-cyclohexylene group in which one  $\text{CH}_2$  group or more than one non-adjacent  $\text{CH}_2$  groups in the group may be replaced by  $-\text{O}-$  or  $-\text{S}-$ , a 1,4-phenylene group in which one  $\text{CH}_2$  group or more than one non-adjacent  $\text{CH}_2$  groups in the group may be replaced by  $-\text{N}=\text{}$ , a 1,4-cyclohexenylene group, 1,4-bicyclo(2,2,2)octylene group, piperidine-1,4-diyl group, naphthalene-2,6-diyl group, trans-decahydronaphthalene-trans-2,6-diyl group or 1,2,3,4-tetrahydronaphthalene-2,6-diyl group, and although these may be substituted with a cyano group or halogen, in the case m or n represents 2, at least one of the two L or M present represents a single bond; provided that the following cases are excluded:

- ✓ i. case in which m and n represent 0, R represents a non-substituted alkyl group, and Z represents a non-substituted alkyl group or cyano group;
- ii. case in which either m or n represents 1, the other of m or n represents 0, ring A or ring B when present represents a 1,4-cyclohexylene group, L or M when present represents a single bond, R or Z bonded to a decahydronaphthalene ring represents a non-substituted alkyl group, and R or Z bonded to a 1,4-cyclohexylene group represents a non-substituted alkyl group, alkoxy group or alkenyloxy group;
- iii. case in which either m or n represents 1, the other m or n represents 0, ring A or ring B when present represents a 1,4-cyclohexylene group, L when present represents  $-\text{OCO}-$  or M when present represents  $-\text{COO}-$ , R or Z bonded to a decahydronaphthalene ring represents a non-substituted alkyl group, and R or Z bonded to a 1,4-cyclohexylene group represents a non-substituted alkyl group or cyano group;
- iv. case in which either m or n represents 1, the other m or n represents 0, ring A or ring B when present represents a non-substituted 1,4-phenylene group, L when present represents  $-\text{OCO}-$  or M when present represents  $-\text{COO}-$ , L or M when present represents a single bond, R or Z bonded to a decahydronaphthalene ring represents an alkyl group, and R or Z bonded to a 1,4-phenylene group represents a non-substituted alkyl group, alkoxy group, hydroxyl group, hydrogen atom, carboxyl group or cyano group;
- v. case in which either m or n represents 1, the other m or n represents 0, ring A or ring B when present represent a non-substituted 1,4-phenylene group, L or M when present represents a single bond, R or Z bonded to a decahydronaphthalene ring represents a non-substituted alkoxy group, and R or Z bonded to a 1,4-

phenylene group represents a non-substituted alkyl group;

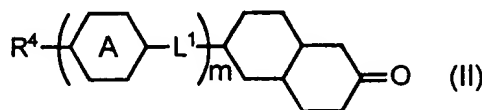
vi. case in which either m or n represents 1, the other m or n represents 0, ring A or ring B when present represents a trans-decahydronaphthalene-trans-2,6-diyl group, L when present represents -OCO-, M when present represents -COO- or L or M when present represent a single bond, and R and Z represent non-substituted alkoxy groups;

vii. case in which either m or n represents 1, the other m or n represents 0, ring A or ring B when present represents a non-substituted naphthalene-2,6-diyl group, L when present represents -OCO- or M when present represents -COO-, R or Z bonded to a decahydronaphthalene ring represents a non-substituted alkyl group, and R or Z bonded to a naphthalene-2,6-diyl group represents a non-substituted alkyl group, bromine atom or cyano group, or the case in which R or Z bonded to a decahydronaphthalene ring represents a non-substituted alkoxy group, and R or Z bonded to a naphthalene-2,6-diyl group represents a non-substituted alkyl group or cyano group;

viii. case in which n represents 2, m represents 0, R represents a non-substituted alkyl group, M when present adjacent to a decahydronaphthalene ring represents -COO-, at least one of rings B present represents a non-substituted 1,4-phenylene group, and Z represents a non-substituted alkyl group or bromine atom, or the case in which at least one of rings B present represents a pyrimidine-2,5-diyl group, and Z represents a non-substituted alkyl group, alkoxy group or cyano group; and

ix. case in which m and n represent 1, ring A represents a trans-decahydronaphthalene-trans-2,6-diyl group or a 1,4-cyclohexylene group, ring B represents a non-substituted 1,4-phenylene group or 1,4-cyclohexylene group, L represents a single bond, M represents -COO-, -OCO-, -CH<sub>2</sub>O- or -OCH<sub>2</sub>-, and R and Z represent non-substituted alkyl groups.

14. (Amended) A compound represented by general formula (II):

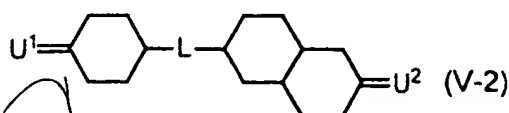
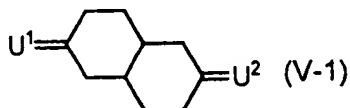


(wherein, R<sup>4</sup> represents an alkyl group, alkoxy group, alkenyl group, alkenyloxy group or alkoxyalkyl group, L<sup>1</sup> represents -CH<sub>2</sub>CH<sub>2</sub>-, -CH(CH<sub>3</sub>)CH<sub>2</sub>-, CH<sub>2</sub>CH(CH<sub>3</sub>)-, -CH<sub>2</sub>O-, -OCH<sub>2</sub>-, -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -COO-, -OCO-,

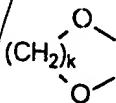
B2  
CONT

$-\text{CH}=\text{CH}-$ ,  $-\text{CF}=\text{CF}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{O}(\text{CH}_2)_3-$ ,  $-(\text{CH}_2)_3\text{O}-$ ,  $-(\text{CH}_2)_4-$ , or a single bond,  $\text{R}^4$  represents an alkenyl group, alkenyloxy group or alkoxyalkyl group when  $\text{L}^1$  represents a single bond, ring A represents a trans-1,4-cyclohexylene group in which one  $\text{CH}_2$  group or more than one non-adjacent  $\text{CH}_2$  groups in the group may be replaced by  $-\text{O}-$  or  $-\text{S}-$ , a 1,4-phenylene group in which one  $\text{CH}_2$  group or more than one non-adjacent  $\text{CH}_2$  groups in the group may be replaced by  $-\text{N}=\text{}$ , a 1,4-cyclohexenylene group, 1,4-bicyclo(2,2,2)octylene group, piperidine-1,4-diyl group, naphthalene-2, 6-diyl group, trans-decahydronaphthalene-trans-2,6-diyl group or 1,2,3,4-tetrahydronaphthalene-2, 6-diyl group, m represents an integer of 0-2, and the decahydronaphthalene ring has a trans form).

16. (Twice Amended) A compound represented by general formula (V-1) or general formula (V-2):

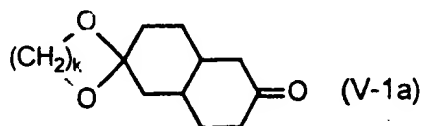


(wherein,  $\text{U}^1$  and  $\text{U}^2$  respectively and independently represent an oxygen atom or the following structure:



(wherein, k represents an integer from 1 to 7), L represents  $-\text{CH}_2\text{CH}_2-$ ,  $-\text{CH}(\text{CH}_3)\text{CH}_2-$ ,  $-\text{CH}_2\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}_2\text{O}-$ ,  $-\text{OCH}_2-$ ,  $-\text{CF}_2\text{O}-$ ,  $-\text{OCF}_2-$ ,  $-\text{COO}-$ ,  $-\text{OCO}-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CF}=\text{CF}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{O}(\text{CH}_2)_3-$ ,  $-(\text{CH}_2)_3\text{O}-$ ,  $-(\text{CH}_2)_4-$  or a single bond, and the decahydronaphthalene ring has a trans form).

20. (Amended) A production method of general formula (V-1a):



Amendment under 37 CFR 1.111  
Shinji OGAWA et al.

U.S. Patent Application Serial No. 09/763,531  
Attorney Docket No. 010184

(wherein k represents an integer from 1 to 7) including monoacetalation of a compound represented by general formula (V-1D):

